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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/765,014
Filing Date: January 17, 2001
Appellant(s): AGAZZI, OSCAR E.

John A. Wiberg
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on 02 July 2008 appealing from the Office action mailed on 11 July 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is substantially correct.

There is a typographical error on page 9. On page 9, first paragraph, "Claim 57 is directed to a method of signaling over an optical channel" is stated where "Claim ~~57~~ 61 is directed to a method of signaling over an optical channel" may be intended.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

GROUNDS OF REJECTION NOT ON REVIEW

The following grounds of rejection have not been withdrawn by the examiner, but they are not under review on appeal because they have not been presented for review in the appellant's brief.

Claims 5, 16, 31, 36, 41, 45, 60, 64, 69, and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ling et al. (International Application No. WO 98/39871) in view of any/all of

Ungerboeck (“Channel coding with multilevel/phase signals”), Lee (*Convolutional Coding: Fundamentals and Applications*), and Schlegl (*Trellis Coding*) and further in view of Uyematsu et al. (“Trellis coded modulation for multilevel photon communication systems”), and Winters et al. (“Reducing the effects of transmission impairments in digital fiber optic systems”) as applied to claims 2, 13, 30, 32, 39, 43, 59, 63, 66, and 72, and further in view of Fischer et al. (“Dynamics limited precoding, shaping, and blind equalization for fast digital transmission over twisted pair lines”).

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

WO 98/39871	LING et al.	09-1998

UNGERBOECK, G. "Channel coding with multilevel/phase signals." IEEE Transactions on Information Theory, Vol. 28, No. 1. January 1982: 55-67.

LEE, L.H. Charles. *Convolutional Coding: Fundamentals and Applications*. Boston, Massachusetts: Artech House, Inc., 1997.

SCHLEGL, Christian. *Trellis Coding*. New York, New York: The Institute of Electrical and Electronics Engineers, Inc., 1997.

UYEMATSU, T. et al. "Trellis coded modulation for multilevel photon communication system." Singapore ICCS/ISITA '92. 'Communications on the Move'. 16-20 November 1992: 582-587, vol. 2.

WINTERS, J.H. et al. "Reducing the effects of transmission impairments in digital fiber optic systems." IEEE Communications Magazine, June 1993, Vol. 31, No. 6: 68-76.

SKLAR, B. *Digital Communications: Fundamentals and Applications*. Englewood Cliff, New Jersey: P T R Prentice Hall, 1988.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1, 6-9, 11-12, 18-20, 22-23, 28, 32, 37-38, 42, 57, 61, 65, and 70-71** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ling et al. (International Application No. WO 98/39871, hereinafter "Ling") in view of any/all of Ungerboeck ("Channel coding with multilevel/phase signals"), Lee (*Convolutional Coding: Fundamentals and Applications*), and Schlegl (*Trellis Coding*) and further in view of Uyematsu et al. ("Trellis coded modulation for multilevel photon communication systems," hereinafter "Uyematsu"), and Winters et al. ("Reducing the effects of transmission impairments in digital fiber optic systems", hereinafter "Winters").

Regarding claim 1, Ling discloses:

A method for high-speed transmission of information data on a channel, the method comprising:

encoding (Fig. 3, portion before DAC 326) information via a trellis encoder to produce digital multilevel symbols;

equalizing the digital multilevel symbols to compensate for characteristics of the channel (p. 3, l. 17-28), said equalizing comprising precoding the digital multilevel symbols using a Tomlinson Harashima precoder (Tomlinson/Harashima precoding 324);

converting (DAC 326) the digital multilevel symbols into analog multilevel symbols; and transmitting the analog multilevel signals (output of DAC 326) over the channel.

Ling does not expressly disclose:

said channel being an *optical* channel.

However, the method of Ling appears to be a trellis coded modulation (TCM) scheme (implied by trellis decoder 366 in Fig. 3 of Ling), and Uyematsu teaches that applying TCM to optical communication systems is known in the art (Uyematsu, p. 582, col. 1, last paragraph). The only portion of a TCM system that appears lacking in the system of Ling is an express disclosure of a trellis encoder. However, it is known that trellis encoding incorporates convolutional encoding and mapping, as shown in Ungerboeck (p. 58, Fig. 3), Lee (p. 159, Figure 7.11), and Schlegl (p. 44, Fig. 3.1 shows a trellis encoder; p. 91 and Fig. 4.1 show that the FSM in Fig. 3.1 is a convolutional encoder). Fig. 3 of Ling shows basic elements of a trellis encoder: a convolutional encoder 320 and bit to symbol mapping 322. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ Ling's convolutional encoder 320 and bit to symbol mapping 322 as a trellis encoder. One of ordinary skill in the art would have been motivated to do this since the trellis decoder 366 of Ling implies the complementary use of trellis encoding. As an additional motivation, trellis encoding provides an advantage over just convolutional encoding: preservation of bandwidth (Schlegl, p. 8).

Accordingly, the system of Ling in view of any/all of Ungerboeck, Lee, and Schlegl would constitute a TCM system. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to apply the TCM method of Ling in view of any/all of Ungerboeck, Lee, and Schlegl to an optical communication system to transmit the analog multilevel signals over an *optical* channel. One of ordinary skill in the art would have been motivated to do this since TCM is attractive in optical communication systems. That is, TCM can help relieve bandwidth limits imposed on an optical system by the optical system's electrical parts (Uyematsu, p. 582, col. 1, last paragraph). Also, it is well known that optical channels, such as optical fiber, offer benefits over other types of channels, such as

electrical channels. Some well-known benefits of optical fiber are low loss and lower susceptibility to electromagnetic interference.

Additionally, the system of Ling in view of any/all of Ungerboeck, Lee, Schlegl, and further in view of Uyematsu does not expressly disclose:

equalizing the digital multilevel symbols to compensate for characteristics of the ***optical*** channel.

However, performing equalization in optical systems is well known in the art, as shown by Winters (Winters, e.g., p. 68, col. 1, 1st paragraph; equalization by transversal filters in Tables 1-3; at transmitting side on p. 72, col. 2, middle paragraph; at receiving side on p. 70). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ the equalization techniques of Ling in the optical system of Ling in view of any/all of Ungerboeck, Lee, Schlegl, and Uyematsu. One of ordinary skill in the art would have been motivated to do this since equalization, which reduces inter-symbol interference (ISI), is effective in compensating for characteristics of an optical channel (Winters, p. 68, col. 2, last paragraph; equalization by transversal filters in Tables 1-3; at transmitting side on p. 72, col. 2, middle paragraph; at receiving side on p. 70), thus enabling one to significantly increase the data rate and/or reduce the effect of transmission impairments and improve performance in optical systems (Winters, p. 68, col. 1, 1st paragraph).

Regarding claim 6, Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters discloses:

The method of claim 1 wherein the information that is encoded comprises input bits and wherein encoding the information includes mapping the input bits into digital multilevel symbols (bits to symbol mapping 322).

Regarding claim 7, Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters discloses:

The method of claim 1 wherein transmitting the analog multilevel symbols over an optical channel comprises modulating the intensity of a light source according to the level of the analog multilevel symbols (Uyematsu, “intensity modulator,” p. 582, middle of col. 2).

Regarding claim 8, Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters discloses:

The method of claim 1 wherein transmitting the analog multilevel signals over an optical channel comprises modulating laser intensity according to a level of the analog multilevel signals (Uyematsu, “intensity modulator,” p. 582, middle of col. 2).

Regarding claim 9, Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters discloses:

A method as in claim 1 wherein equalizing the digital multilevel symbols to compensate for the laser and channel characteristics comprises:

characterizing the channel (i.e. channel responses on p. 2, l. 31-35); and

applying an inverse characterization of the channel to the digital multilevel symbols (i.e. filter coefficients on p. 3, l. 17-22).

Regarding claim 11, claim 11 is a method claim that corresponds largely to the method claim 1. Therefore, the recited steps in method claim 1 read on the corresponding steps in method claim 11. Claim 11 also includes limitations absent from claim 1. Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters does not expressly disclose these limitations:

accepting information from a plurality of sources;

a *plurality of* trellis encoders, digital multilevel symbols, analog multilevel signals; and

transmitting the analog multilevel signal by time division multiplexing the plurality of analog multilevel signals onto an optical channel.

However, Examiner takes Official Notice that these “plurality” limitations are all part of an extremely well known practice of transmitting a time division multiplexed signal. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement these limitations in the method of Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters. One of ordinary skill in the art would have been motivated to do this since transmitting a time division multiplexed signal is a common way to transmit multiple channels of data

across a single optical communication line (fiber), thus increasing the number of users without requiring the installation of additional optical communication lines (fibers).

Regarding claims 12 and 18-20, claims 12, 18, 19, and 20 are method claims that correspond to method claims 6, 7, 8, and 9, respectively. Therefore, the recited steps in method claims 6-9 read on the corresponding steps in method claims 12 and 18-20.

Regarding claims 22-23, Examiner takes Official Notice that each of these claims discloses known ways to implement the extremely well known practice of transmitting a time division multiplexed signal. Claim 22 discloses a way using a *single* analog to digital converter. Claim 23 discloses a way using a *plurality* of digital to analog converters. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement these various ways in the method of Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters. One of ordinary skill in the art would have been motivated to do this since each offers design flexibility for the system of Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters.

Regarding claim 28, Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters discloses:

A method of signaling over an optical channel, the method comprising:

accepting data from a source (reception of data in 310 in Fig. 3);

trellis encoding the data (Fig. 3, portion before DAC 326);

equalizing the data (Ling, Fig. 3, Tomlinson/Harashima precoding 324), said equalizing comprising precoding the data using a Tomlinson Harashima precoder;

coupling the equalized encoded data into an optical channel (Uyematsu, “intensity modulator,” p. 582, middle of col. 2);

conveying the data over the optical channel;

accepting data from the optical channel (Uyematsu, “intensity modulator,” p. 582, middle of col. 2);

decoding the data accepted from the optical channel (receiver 312); and

providing the decoded data to an interface (output of receiver 312).

Regarding claims 32 and 37, claims 32 and 37 are apparatus claims that correspond to method claims 1 and 8, respectively. Therefore, the recited steps in method claims 1, and 8 read on the corresponding means in apparatus claims 32 and 37. Claims 32 and 37 also include limitations absent from claims 1 and 8. Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters discloses these limitations:

an analog signal to optical converter that converts the analog signal to an optical level for coupling into an optical channel (Uyematsu, "intensity modulator," p. 582, middle of col. 2).

Regarding claim 38, claim 38 is an apparatus claim that corresponds to method claim 11. Therefore, the recited steps in method claim 11 read on the corresponding means in apparatus claim 38. Claim 38 also includes limitations absent from claim 11. Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters discloses some of these limitations:

an optical source that receives the plurality of analog multilevel signals and produces a light output (Uyematsu, "intensity modulator" and corresponding light source for the modulator, p. 582, middle of col. 2) for driving an optical channel.

Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters does not expressly disclose:

a plurality of data signals;

a plurality of equalizers; and

a plurality of equalized digital multilevel signals.

However, Examiner takes Official Notice that these "plurality" limitations are all part of an extremely well known practice of transmitting a time division multiplexed signal. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement these limitations in the method of Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters. One of ordinary skill in the art would have been motivated to do this since transmitting a time division multiplexed signal is a common way to transmit multiple channels of data

across a single optical communication line (fiber), thus increasing the number of users without requiring the installation of additional optical communication lines (fibers).

Regarding claim 42, claim 42 is an apparatus claim that corresponds largely to the method claim 11. Therefore, the recited steps in method claim 11 read on the corresponding means in apparatus claim 42. Claim 42 also includes limitations absent from claim 11. These limitations are:

a plurality of equalizers; and

a digital to analog converter that *sequentially* accepts the plurality of equalized digital multilevel signals and produces a plurality of *sequential* analog multilevel signals.

However, Examiner notes that the treatment of claim 11 incorporates a time division multiplexed signal. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to include these “plurality” and “sequential” limitations in the apparatus of Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters. One of ordinary skill in the art would have been motivated to do this since time division multiplexing requires *sequential* treatment of *a plurality of* channels.

Regarding claim 57, claim 57 is a method claim that corresponds to method claim 28. Therefore, the recited steps in method claim 28 read on the corresponding steps in method claim 57.

Regarding claim 61, claim 61 is a method claim that corresponds largely to method claim 28. Therefore, the recited steps in method claim 28 read on the corresponding means in apparatus claim 61. Claim 61 also includes limitations absent from claim 28. Ling in view of any/all of Ungerboeck, Lee, and Schlegl and further in view of Uyematsu, and Winters discloses these limitations:

converting the data accepted from the optical channel to digital data (ADC 360 in Fig. 3); and

decoding the digital data accepted from the optical channel (portion after ADC 360).

Regarding claims 65 and 70, claims 65 and 70 are method claims that correspond to method claims 32 and 37, respectively. Therefore, the recited steps in method claims 32 and 37 read on the corresponding steps in method claims 65 and 70.

Regarding claim 71, claim 71 is a method claim that corresponds to apparatus claim 38. Therefore, the recited means in apparatus claim 38 read on the corresponding means in apparatus claim 71.

(10) Response to Argument

Appellant's arguments filed on 02 July 2008 have been fully considered but they are not persuasive. Appellant states,

> Claim 1 is directed to a method for high-speed transmission of information data on an optical channel. The method includes "equalizing the digital multilevel symbols to compensate for characteristics of the optical channel, said equalizing comprising precoding the digital multilevel symbols using a Tomlinson-Harashima precoder; converting the digital multilevel symbols into analog multilevel signals; and transmitting the analog multilevel signals over the optical channel." Thus claim 1 includes performing Tomlinson-Harashima precoding in an optical transmission system. Appellant submits that this is not taught or suggested by the cited art. The only cited art that teaches Tomlinson-Harashima precoding is Ling, which is not directed to an optical transmission system. The only transmission medium referred to in Ling is copper (see page 4, last paragraph). On page 3 of the final Office Action, the Examiner acknowledges that the system of Ling in view of any/all of Ungerboeck, Lee and Schlegl, and further in view of Uyematsu, fails to disclose "equalizing the digital multilevel symbols to compensate for characteristics of the optical channel." The Examiner goes on to assert that equalizing digital multilevel symbols to compensate for characteristics of the optical channel is obvious because "performing equalization in optical systems is well-known in the art, as shown by Winters." However, Winters does *not* teach performing Tomlinson-Harashima precoding. Appellant submits that it would not have been obvious to one of ordinary skill in the art at the time that the invention was made to implement Tomlinson-Harashima precoding in an optical transmission system because optical transmission systems have different channel characteristics and present different challenges than copper cabling transmission systems. In the Office Action, the Examiner argues that it would be obvious to perform trellis coded modulation (TCM) in an optical transmission system, but fails to argue that it would be obvious to use Tomlinson-Harashima precoding in an optical transmission system. Appellant submits that it would not have been obvious to one of ordinary skill in the art at the time that the invention was made to implement Tomlinson-Harashima precoding in an optical transmission system for the reasons set forth above. The Examiner does not provide any motivation to apply the Tomlinson-Harashima precoding of Ling to an optical communication system. Appellant submits that there is no suggestion to combine the Tomlinson-Harashima equalization on the transmit side of Ling with Uyematsu's trellis coding for optical systems. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Appellant submits that there is no suggestion in either Ling, Uyematsu or Winters (nor in Ungerboeck, Lee or Schlegl) to apply Ling's Tomlinson-Harashima precoding to an optical system. Therefore, Appellant submits that claim 1, and claims 5-9 depending therefrom, are allowable over the cited art.
>
> In *Graham v. John Deere*, the Supreme Court held regarding obviousness inquiries that "Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." The problem of intersymbol interference represents a long-

> felt need in the art of optical transmission systems, as evidenced by the Examiner's acknowledgement on page 10 of the final Office Action that "both (optical transmission systems and copper cabling transmission systems) are subject to the problem of intersymbol interference." The present invention's use of Tomlinson-Harashima precoding to compensate for characteristics of the optical channel represents a solution to this long-felt need. Yet the Examiner, who has clearly done extensive searching, has failed to uncover a single instance of this solution for optical transmission systems. This long-felt but unsolved need is further evidence that the invention claimed in claim 1 is not obvious.
>
> (ARGUMENT, p. 12-14).

Examiner respectfully notes that Appellant's arguments are not persuasive on at least two grounds.

First, the combination of the prior art of record ***already*** includes Tomlinson-Harashima precoding. That is, the standing rejection applies the teachings of Ling to an optical communication system. This application implies the inclusion of the Tomlinson-Harashima teachings of Ling in the combination of the prior art of record. It is not a requirement that the examiner provide an additional obviousness argument to incorporate teachings that are ***already*** included in the combination of the prior art of record. Accordingly, Appellant's arguments are not persuasive.

Second, even though optical transmission systems have different channel characteristics and present different challenges than copper cabling transmission systems, there are also ***similarities***. Both are subject to the problem of intersymbol interference (ISI) (Ling, p. 1; Winters, p. 68-69, bridging paragraph). Tomlinson-Harashima teachings help combat ISI (Ling, p. 4, l. 1-25). Therefore, one would be motivated to employ Tomlinson-Harashima teachings in an optical communication system environment to combat the similar problem of ISI. Moreover, notice that Winters teaches a variety of compensation techniques that are well known in electrical communication systems (Winters, Tables 1-5, compensation techniques). Then, notice that Winters teaches the application of these techniques in an optical communication system environment (Winters, Tables 1-5, impairments). In view of this ***overall trend*** in Winters, one could also reasonably expect benefits from other compensation techniques, well known in electrical communication systems, for optical communication systems. Such compensation techniques could include Tomlinson-Harashima teachings. Accordingly, Appellant's arguments are not persuasive.

Additionally, Examiner respectfully acknowledges Appellant's focus on the ***differences*** between optical transmission systems and copper cabling transmission systems, i.e., the "different channel

characteristics" and the "different challenges". However, the techniques of the prior art of record are not limited by, or even focused on, any particular type of transmission medium. That is, the ***fundamental concepts*** of these various techniques belong to the field of ***digital communications*** (e.g., notice that background reference Sklar, titled *Digital Communications: Fundamentals and Applications*, discusses maximum likelihood detection (2.9.1) also found in Winters, ISI (2.11) also found in Winters and Ling, equalization (2.11.2) also found in Winters and Ling, precoding (2.12.3) also found in Ling, the communication channel (4.2) also found in Winters and Ling, trellis-coded modulation (7.10.6) also found in Ungerboeck, Lee, and Schlegl; Ling teaches that Tomlinson-Harashima precoding is a type of digital communications precoding technique, p. 7, l. 29-32). This field of digital communications recognizes that the transmission medium may be embodied in various forms (background reference Sklar, e.g., wires, coaxial cables, fiber optic cables, waveguides, the atmosphere, empty space on p. 189, paragraph under "THE CHANNEL"). Even though each type of transmission medium has "different channel characteristics" and presents "different challenges", the ***fundamental concepts*** of digital communications still apply to all of these types of transmission media. Similarly, the fundamental concepts of the digital communication techniques of the prior art of record apply to optical transmission systems ***and*** copper cabling transmission systems. Winters provides exemplary evidence of the ***broad applicability*** of these ***fundamental concepts*** by teaching a variety of compensation techniques (Winters, Tables 1-5, compensation techniques), which are well known in electrical communication systems, and showing the application of these techniques in an optical communication system environment (Winters, Tables 1-5, impairments). As the technique of Tomlinson-Harashima precoding also constitutes a digital communication technique (Ling teaches that Tomlinson-Harashima precoding is a type of digital communications precoding technique, p. 7, l. 29-32), it follows that the fundamental concepts of Tomlinson-Harashima precoding would also have similar ***broad applicability*** to various types of transmission media, including optical transmission systems, copper cabling transmission systems, and other transmission media. Accordingly, Appellant's concern about different transmission media is ***minimized*** by the realization that digital communication techniques have ***broad applicability*** to various

types of transmission media including optical transmission systems and copper cabling transmission systems.

Furthermore, even the prior art shares Appellant's concern about different transmission media (background reference Sklar, e.g., wires, coaxial cables, fiber optic cables, waveguides, the atmosphere, empty space on p. 189, paragraph under "THE CHANNEL"; Uyematsu, p. 582, INTRODUCTION). Nonetheless, the prior art still teaches the application of various digital communication techniques in different transmission media. Even though the prior art of record does not expressly show Tomlinson-Harashima precoding in an optical transmission system, the state of the prior art does show that the field was clearly moving in the direction of applying various digital communication techniques in optical transmission systems (e.g., Winters and Uyematsu). A common practice of obviousness is to apply a particular technique in one situation to address the similar problem in a similar situation. As noted above, the standing rejections recognize this practice of obviousness. Both optical transmission systems and copper cabling transmission systems are subject to the problem of intersymbol interference (ISI) (Ling, p. 1; Winters, p. 68-69, bridging paragraph). Tomlinson-Harashima teachings help combat ISI (Ling, p. 4, l. 1-25). Therefore, one would be motivated to employ Tomlinson-Harashima teachings in an optical communication system environment to combat the similar problem of ISI.

Summarily, Appellant's arguments are not persuasive. Accordingly, Examiner respectfully maintains the standing rejections.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/D. S. K./

Examiner, Art Unit 2613

Conferees:

/Kenneth N Vanderpuye/

Supervisory Patent Examiner, Art Unit 2613

/Jason Chan/

Supervisory Patent Examiner, Art Unit 2613